

Remarks

In the Office Action mailed November 20, 2003, the Examiner rejected claims 18-22 and 24-28 under 35 U.S.C. § 112, second paragraph.

Claims 18-21 and 25-28 were rejected under 35 U.S.C. § 103(a) for alleged obviousness based on U.S. Patent 4,643,817 to Appleby.

The Examiner indicated that claims 22 and 24 would be allowable if rewritten in independent form.

In view of the clarifying amendments and remarks set forth herein, Applicants submit that all claims 18-22 and 24-28, as well as new claims 29-31, are in condition for allowance.

A. Rejection Under 35 U.S.C. § 112, Second Paragraph, Has Been Remedied

In support of this ground of rejection, the Examiner asserted:

Claims 18-22 and 24-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 18 recites the limitation "said anode" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 20 recites the limitation "said metal oxide" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 24 recites the limitation "said catholyte" in line 2. There is insufficient antecedent basis for this limitation in the claim.

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It is believed that the recitation of "said anode conductor layer" in claim 18 is proper. Prior to that recitation, claim 18 includes another recitation for "an anode conductor layer."

The Examiner's concern regarding claim 20 has been amended to depend from claim 19 which recites "a metal oxide catalyst."

The Examiner's concern over claim 24 has been remedied. Claim 18 contains a recitation for "a catholyte." This is explained in detail in the footnote accompanying the claim amendments. Moreover, it is believed that this ground of rejection is moot since claim 24 has been placed in independent form.

B. Rejection Under 35 U.S.C. § 103 Has Been Overcome and Should Be Withdrawn

The Examiner contended:

Claims 18-21 and 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Appleby.

Appleby describes a "photolytic" cell, which comprises a transparent window 32. See col. 5, lines 35-40. The window is disposed between layers 16 and 18 and one of the layers appears to be an "anode conductor layer" because oxygen is produced on one side of the structure. A "light-activated catalyst" is disposed on at least one of the layers. See col. 4, lines 50-65. The reference appears to show a second catalyst, 28, and 60 in figures 3-4. The apparatus appears to provide a cathode to anode connection because the system would be inoperable otherwise.

The reference does not show a "cathode bordering said cathode", however, it would be considered obviously within the skill of the art to provide an additional surrounding cathode as desired to insure a more efficient product production. Figures 3-4 appear to provide a "bordering" electrode structure.

It is respectfully submitted that this ground of rejection is misplaced due to the previous typographical error in independent claim 18. As previously explained, claim 18 has been corrected to recite, in part, that the photolytic cell comprises "a catholyte bordering said cathode." The catholyte is explained in the specification of the present application, such as on pages 17-18 and 32. Appleby entirely fails to teach or even suggest a catholyte bordering a cathode. In view of the foregoing, it is believed that all pending claims are patentable over the '817 patent to Appleby.

Additionally, Appleby fails to disclose or suggest the present invention. Appleby discloses oppositely placed p-n junctions where adjacent layers p (layer 16) and n (layer 18) are separated by a layer of tin oxide (layer 32). The water does not contact the tin oxide layer 32, but instead contacts thin platinum layers 26 and 28 where oxygen and hydrogen are produced. Light impinging on the outside of a platinum catalyst layer 28 at p layer (layer 14) produces oxygen while at an oppositely placed n layer (layer 20) hydrogen is produced at platinum catalyst layer 26.

The present invention does not involve p-n cells, produces the oxygen and hydrogen at the same catalytic layer, etc. The Examiner has pointed to no teaching or suggestion in Appleby or any other reference to produce the present invention. Hence, withdrawal of this rejection is requested.

C. Claims 22 and 24 Are in Condition for Allowance

The Examiner stated that:

Claim 22 and 24 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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Claims 22 and 24 have been amended to present those claims in independent form, in accordance with the Examiner's request. Those claims are in condition for allowance.

D. New Claims 29-31 Have Been Added for Clarification Purposes

Additionally, claims 29-31 have been added to further particularly point out various features of the present invention. The new claims have been added for clarification purposes only, and do not in any way limit the scope of the present invention.

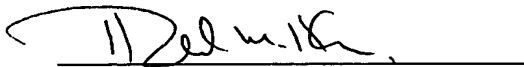
E. Conclusion

In view of the foregoing, it is respectfully submitted that all claims 18-31 are in condition for allowance. Withdrawal of the rejections and issuance of a Notice of Allowance is requested.

In the event the Examiner considers personal contact advantageous to the disposition of this case, he/she is hereby authorized to call Richard M. Klein, at telephone number 216/861-5582, Cleveland, Ohio.

Respectfully submitted,

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